

THE INSTITUTE REPORT



From the
VETERINARY VIRUS RESEARCH INSTITUTE
Cornell University, Ithaca, New York

September, 1970

Volume 20

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CORNELL RESEARCH LABORATORY
FOR DISEASES OF DOGS
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MESSAGE FROM THE DIRECTOR

LIBRARY

WHEN trustees of Cornell University authorized formation of the Cornell Research Laboratory for Diseases of Dogs in 1950, this act implied permanency. It was not meant to be a temporary measure to cover the emergency at that time caused by devastating losses of dogs from distemper. After the first decade of building, organizing, and research work, progress achieved to that time was summarized in the Institute Report for 1960, concerning development of the first permanent research center for dogs. Now, still another decade has passed, and, in the table below, selected information is presented as an indication that the original purpose of the Dog Laboratory is being fulfilled.

INDICATIONS OF GROWTH OF LABORATORY

| Feature | 1950 | 1960 | 1970 |
|--------------------------|----------|-----------|-----------|
| Building Space (Sq. Ft.) | 8,357 | 30,346 | 38,613 |
| Staff | 11 | 37 | 49 |
| Budget | \$27,000 | \$160,000 | \$240,000 |
| Publications | 0 | 118 | 259 |

The publication of 259 scientific papers is of special interest.



Frontispiece shows Institute Laboratories in 1970. Picture above shows Dog Laboratory at time of its dedication in 1950.

In 1950, only three viruses—rabies, infectious canine hepatitis, and distemper—were known to infect dogs in the United States, and there was no certain protection against distemper. Now eight viruses that infect dogs are known. Safe effective vaccines have been made for protection against distemper and infectious canine hepatitis, while other viruses are being studied as their significance becomes apparent.

Of great importance is understanding reached by studies of what occurs in nature. The temporary, but effective, maternal protection given to newborn puppies through colostrum had to be analyzed in great detail before puppies successfully could be protected by immunization given at the proper time.

Progress has been made possible by developments in methods and technology. Isotopes for analyses; centrifuges that permit separation and purification of viruses from the cells in which they have grown; equipment for tissue culture of organisms; deep freeze refrigerators for preservation of specimens; freeze-drying of viruses to remove moisture and allow for storage over long periods of time; electronmicroscopy that reveals size, shape, and structure of viruses; fluorescent antibody techniques by which viruses can be traced as they develop throughout the body and produce disease.

Pictorially, some of these modern scientific developments are included in this report.

FINANCIAL SUPPORT

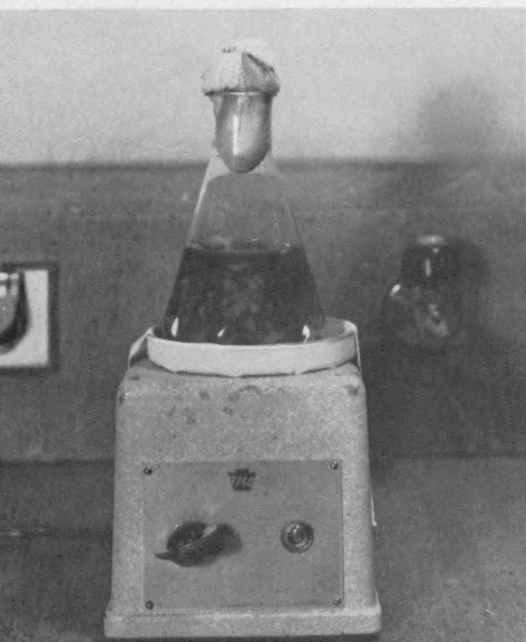
Operating expenses are derived from two sources. Unrestricted annual contributions supply slightly more than half of the budget. Specific bequests are considered restricted funds, invested by the university financial officers, to provide assured salaries for permanent personnel, such as the John M. Olin and the Caspary professorships. The actual amount of annual contributions always is unpredictable. All funds are supervised and audited by officials of the New York State Finance Office at Cornell.

Because the fiscal year of the Institute corresponds to that of New York State, beginning on April 1st and ending on March 31st, and the fiscal year of Cornell University begins on July 1st and ends June 30th, for budget purposes, income for the Institute must be anticipated by the director three months in advance of knowing what the actual income might be. In such circumstances, a balance with neither a deficit nor a surplus is difficult to achieve. A deficit would cause inadequate financing of planned programs, while a large surplus is undesirable, because the Institute wishes to convert all available funds as quickly as possible into worthwhile information.

To assure donors of funds for research for dogs that their funds will support such research, if not in the current year then afterwards, the Cornell University Board of Trustees made a provision for disposal of excess income as follows: "The Institute's income is in excess of its operating expense and the balance of the funds is added to the Institute's Endowment."

RESEARCH WORK IN PROGRESS

| AREAS | SUBJECTS |
|---------------------|--|
| VIROLOGY | <ol style="list-style-type: none">1. Measles vaccine for distemper.2. Prevention of respiratory disease (kennel cough).3. Host response to viruses, especially: Canine herpesvirus Adenovirus type 2 Parainfluenza SV54. Tissue culture methods for growing viruses in tubes of living cells. |
| BACTERIOLOGY | <ol style="list-style-type: none">5. Canine brucellosis6. <i>Bordetella bronchoseptica</i>7. Mycoplasma |
| NUTRITION | <ol style="list-style-type: none">8. Effects of vitamin C on viral diseases9. Needs for calcium |
| BIOCHEMISTRY | <ol style="list-style-type: none">10. Hip dysplasia |
| CLINICAL STUDIES | <ol style="list-style-type: none">11. Eye diseases Diseases of genetic origin Diseases caused by infectious organisms |
| ELECTRON MICROSCOPY | <ol style="list-style-type: none">12. Electron microscope studies of viruses that infect the cells of dogs: Canine distemper Infectious canine hepatitis (Adenovirus type 1) Adenovirus virus type 2 Reovirus Parainfluenza Canine herpesvirus |



Cell dispersal by agitation with trypsin.



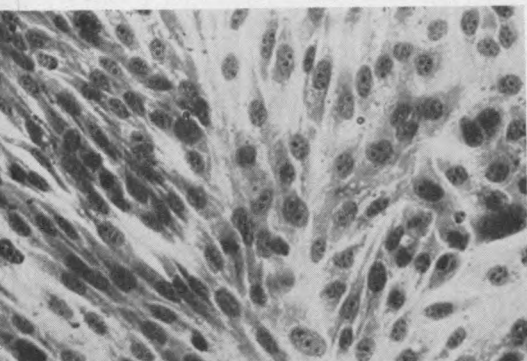
Distribution into tubes of a few cells.



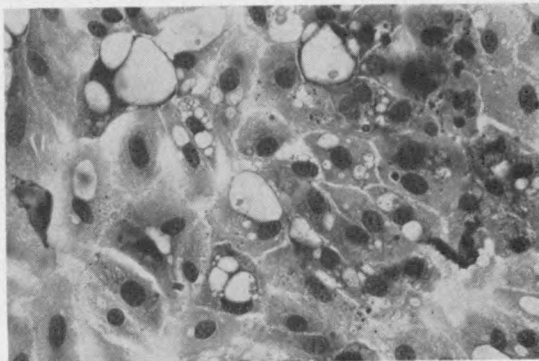
Incubation for growth and multiplication of cells.



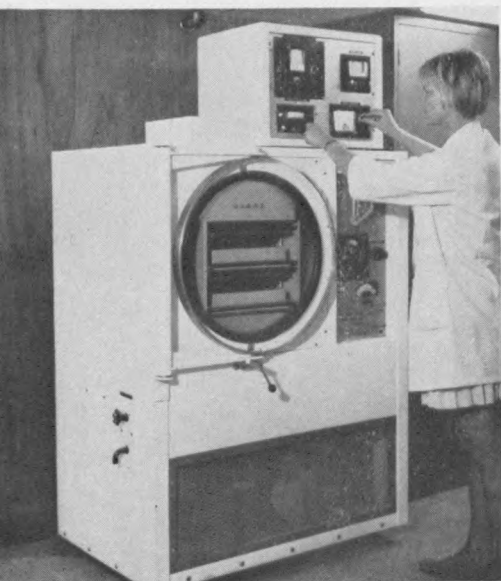
Inoculation of growing cells with virus.



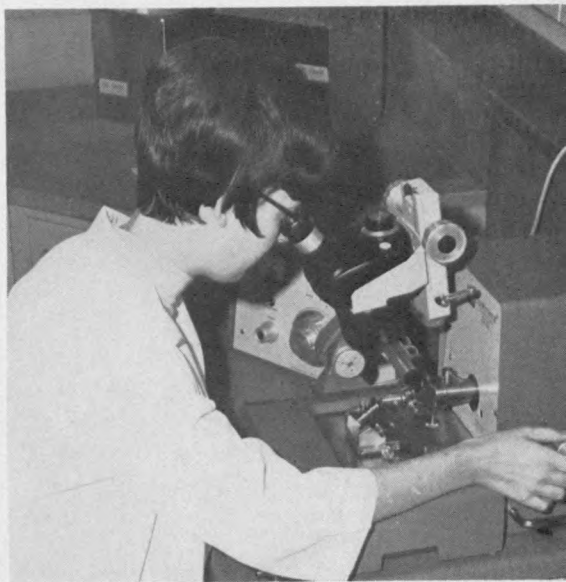
Normal cells before inoculation of virus.



Cells damaged by growth of virus.



Drying weakened virus for vaccine.



Preparation of cells for electron microscopy.

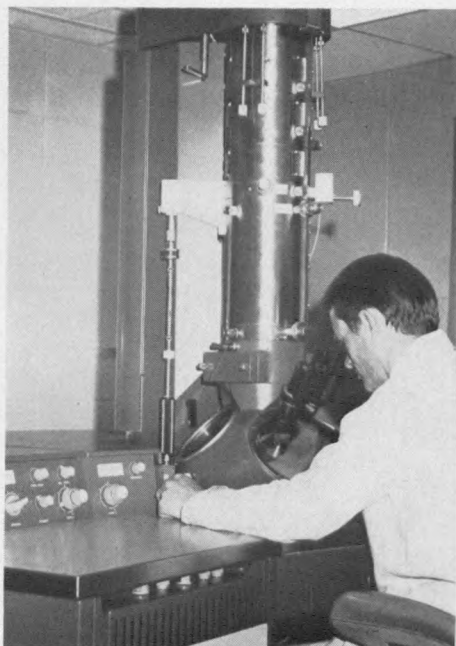
IN MEMORIAM

Richard King Mellon, who died in May, 1970, consistently supported the Veterinary Virus Research Institute by grants of money and by encouraging the best development of the staff and their work. In 1969, he provided funds for the latest addition to the Institute by establishing the Richard King Mellon Foundation Laboratory for Electron Microscopy. This new addition already has allowed a marked improvement in quality and quantity of scientific findings concerning the structure of viruses.

All of our staff members regret the death of Mr. Mellon.

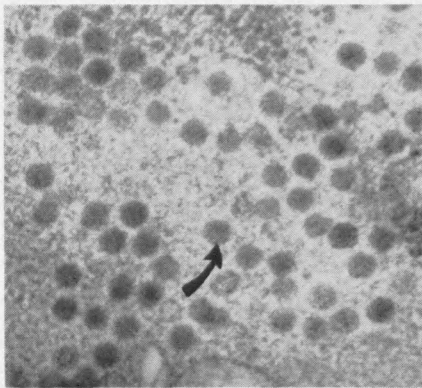
PROMOTION ANNOUNCED

Effective July 1, 1970, Dr. Max J. G. Appel was appointed associate professor on the faculty of Cornell. Dr. Appel received the Dr. Med. Vet. from the University of Hannover and the Ph.D. degree in virology from Cornell in 1967. Dr. Appel has been placed in charge of the Richard King Mellon Electron Microscopy Laboratory. He is known especially for his work on the pathogenesis of distemper and viruses implicated in Kennel Cough.

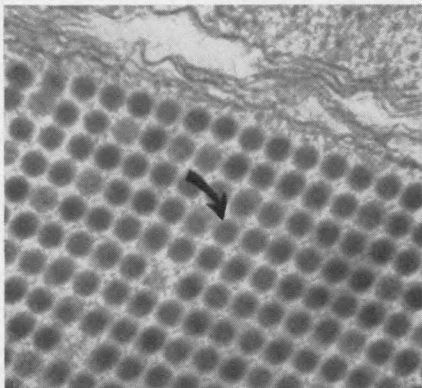


Dr. Max Appel working with electron microscope.

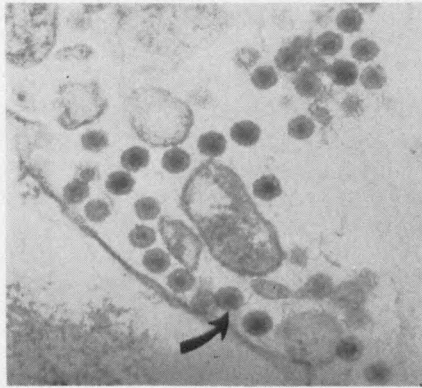
ELECTRON MICROSCOPE PICTURES SHOW SIZE AND SHAPE OF VIRUSES THAT INFECT DOGS. (Arrow indicates virus)



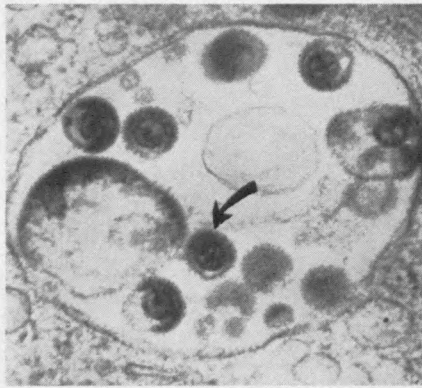
ADENOVIRUS TYPE I (*Infectious Canine Hepatitis*).



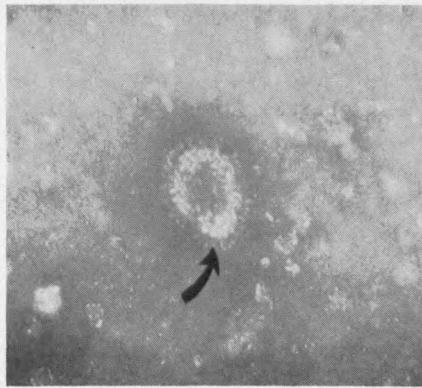
ADENOVIRUS TYPE II (*From Respiratory Disease*).



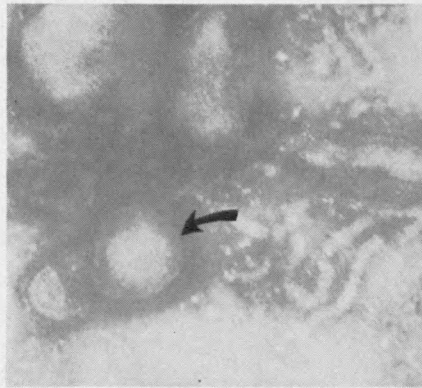
REOVIRUS.



CANINE HERPESVIRUS (*Kills new-born puppies*).



DISTEMPER VIRUS.



PARAINFLUENZA VIRUS SV 5 (*From Respiratory Disease*).

IN APPRECIATION

For their exceptional interest in the Institute, we would like to express appreciation to the following supporters: Mr. and Mrs. Boyce Bailes, Mr. Al Dick, Dr. Oswald R. Jones, Mr. John Lafore, Mr. James A. Moffett, Mrs. Ann W. Olin, Mr. John M. Olin, and Mr. Spencer T. Olin.

Also, we would like to thank the following for their interest and continued support over many years: Dr. Dorothy E. Bradley, Dr. Milton E. Becker, Mr. and Mrs. Gaylord Donnelley, Mrs. N. Clarkson Earl, Dr. Robert Ferber, Miss Gladys Freeman, Dr. Kenneth S. Friderci, Dr. Kenneth I. Gumaer, Mr. and Mrs. E. Roland Harriman, Mrs. Dorothy B. Howe, Mrs. William S. Ladd, Mr. and Mrs. Forest E. Mars, Dr. Robert B. McClelland, Dr. Arthur F. North, Jr., Miss Margaret K. Quarrie, Dr. Rudolph J. Steffen, Mrs. Loulie T. Thompson, Mrs. Vincent F. Wilcox, Mr. Robert Winthrop, Mr. Robert W. Woodruff, and Mrs. Virginia Wooley.

Introduced by Assemblywoman Constance E. Cook in 1969 and sponsored by Senator William T. Smith, a bill that amends the Agriculture and Markets Law in order to provide for a collection of ten cents on each yearly dog license to be used for research on diseases of dogs, was signed into law by Governor Nelson Rockefeller in May, 1970.

This act states: "The legislature finds and declares that the study of diseases of dogs is of vital importance to help in curing the spread of disease and in promoting the health and welfare of the people of the state; that research into diseases of dogs and the search for and the study of viruses that affect man and animals can be of invaluable assistance in preventing and curing disease generally; and that funds for such research and studies should be made available by increasing the annual fees for the licensing of dogs."

Many different individuals have participated in efforts, extending over two calendar years and legislative sessions, to present accurate information to those who could help secure this legislation for the Dog Laboratory. Dog owners, dog club officials, veterinarians, veterinary society members, and a number of other scientists have been sponsors, and each has contributed according to his talents and the opportunity afforded by his position. It is hoped that this act may in the future provide funds for further development of the Dog Laboratory.

IN MEMORIAM

Dr. Oswald R. Jones, who for seven years, until his death last July, was Medical Consultant to this Laboratory, maintained a keen interest in the literature of all branches of the medical sciences and related fields.

Some years ago, convinced of the importance of viruses in some chronic diseases, which coincided with results being published by the Cornell Veterinary Virus Research Institute, concerning ability of viruses to persist in body cells for long periods of time, Doctor Jones established a lasting connection with the Institute. As a consultant, with especial interest in viral diseases that affect the respiratory tract, Doctor Jones maintained an active working relationship. His great knowledge was made available through lectures, suggestions of worthwhile directions for new research, and publication of scientific findings. In addition, he provided funds for support of several young graduate students working for the Ph.D. degree in Virology. Doctor Jones had a quality of enthusiasm that encouraged and inspired all who knew him.

The following have contributed in his memory:

| | |
|---------------------------------------|-----------------------------------|
| Mr. F. W. H. Adams | Mrs. Eugene Homans |
| Mr. R. H. Anderson | Mrs. Jane A. Homes |
| Dr. Max J. G. Appel | Mr. Maynard C. Ivson |
| Mr. C. Everett Bacon | Mrs. Thomas L. Johnson |
| Mrs. C. W. Badenhause | Mr. Thomas L. Johnson |
| Dr. & Mrs. James A. Baker | Mr. & Mrs. August Kern |
| Mr. & Mrs. Milton J. Barber | Mr. David Klee |
| Mr. & Mrs. Chester Baylis | Mrs. Thomas Klein |
| Mr. & Mrs. J. R. Beard | Mrs. Nathalie H. Kubacka |
| Mr. & Mrs. William K. Beckers | Dr. & Mrs. Samuel W. Lambert, Jr. |
| Mrs. Robert S. Benepe | Mr. Donald E. Leith |
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| Dr. Leland E. Carmichael | Mr. & Mrs. Edward P. Maffitt |
| Mrs. B. G. Chapman, Jr. | Mr. William H. Mann |
| Mrs. Hugh J. Chisholm | Mr. & Mrs. Bradley S. Marmon |
| Mr. William H. Chisholm | Mr. Adrian McCalman |
| Mrs. Louise C. Connell | Mr. David H. McConnell |
| Mr. W. Frank Cornell | Mrs. George McMurtry |
| Mrs. Isaacs W. Digges | Mrs. Gizella C. Menegus |
| Dr. & Mrs. John W. Draper | Miss Marilyn A. Menegus |
| Mr. James C. Edwards | Mr. Clifford W. Michel |
| Mr. & Mrs. Selwyn Kip Farrington, Jr. | Mrs. Minot K. Milliken |
| Mrs. William Rodman Fay | Mr. James A. Moffett |
| Mrs. Leo Fennelly | Mr. & Mrs. Paul Montgomery |
| Mrs. Francis P. Garvan | Mr. & Mrs. Nicholas Moseley |
| Mrs. W. R. Grace | New York Bronchoscopic Club |
| Mr. & Mrs. Norman Booth Grant | Mr. John M. Olin |
| Mrs. Edward R. Greeff | Mr. & Mrs. Laurent Oppenheim, Jr. |
| Mr. James L. Harrison | Mr. Courtlandt Otis |
| Mrs. Raymond F. Hawtin | Mrs. Harold E. B. Pardee |

IN MEMORIAM (Cont.)

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 Mr. Donald B. Percy
 Mr. & Mrs. Francis W. Pershing
 Mrs. Thomas H. Pinney
 Mrs. Fernand Pisart
 Mrs. Ernest W. Pittman
 Mr. Joseph Post
 Mrs. Andrew C. Price
 Dr. Algernon B. Reese
 Mr. Dudley Roberts
 Mr. & Mrs. Dudley Roberts
 Mr. Kenneth H. Rockey
 Mr. Joseph D. Scheerer
 Mr. Herbert Scheftel
 Mrs. G. Herbert Semler
 Mr. Whitney North Seymour
 Dr. Ben E. Sheffy
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 Mr. & Mrs. Boston W. Smith
 Mr. & Mrs. Frank E. Smith, Jr.
 Mrs. Harold V. Smith
 Mr. Lawrence W. Snell

Dr. Shirley R. Snow, Jr.
 Dr. & Mrs. Hadley C. Stephenson
 Mr. & Mrs. Charles G. Stradella
 Mr. & Mrs. Preston L. Sutphen
 Mr. Clark Sutherland
 Mrs. Irving H. Taylor
 Mrs. Carl W. Timpson
 Miss Marcelle V. Timpson
 Mr. Carr M. Thomas
 Mrs. Gerard H. Thompson
 Dr. James E. Thompson
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 Mr. J. T. Trippe
 Mr. Donald S. Tuttle
 Mr. & Mrs. E. B. Vinson
 Mr. George G. Walker
 Mr. & Mrs. Arthur T. Whitney
 Mrs. Isabel Wilks
 Mr. & Mrs. Porter L. Willett
 Mr. Russel Woodward
 Mrs. Virginia Woolley
 Mrs. Albert Zimmerman
 Mr. Nicholas S. Zoullas

*KENNEL CLUBS IN MANY PARTS OF THE UNITED STATES SUPPORT
 WORK FOR DOGS AT THE CORNELL RESEARCH LABORATORY FOR
 DISEASES OF DOGS*



President of the Thronateesko Kennel Club of Albany, Georgia, Mrs. S. Baldwin King, Jr., and Dr. W. D. Martin continue their support of the Cornell Dog Laboratory with a check for \$1,000.00. This club was one of the original group which helped in founding the Laboratory in 1950.



President Abe Koblantz, of the Albany, N. Y. Kennel Club, shows continuous support and approval of work at the Dog Laboratory by presenting their check for \$500 to Dr. Ben E. Sheffy.

VIRUS RESEARCH INSTITUTE STAFF

- JAMES A. BAKER, B.S., M.S., Louisiana State University; D.V.M., Ph.D., Cornell. Professor of Virology and Director of the Institute.
 BEN E. SHEFFY, B.S., M.S., Ph.D., Wisconsin. Caspary Professor of Nutrition and Assistant Director of the Institute.

Administration

- DUDLEY BAKER, (Mrs. James A. Baker), Louisiana State University, Editor of Publications. (Mrs. Baker was appointed to this position in 1951 and has served since that time without salary, as a personal contribution to the Institute.)
 BRADLEY G. CORBITT, B.S., Cornell. Associate Director, University Development.
 FREDERICK B. HUTT, B.S.A., Toronto; M.S., Wisconsin; M.A., Manitoba; Ph.D. and D.Sc., Edinburgh. (Professor Emeritus of Animal Genetics), Consultant in Genetics.
 OSWALD R. JONES, B.S., Yale; M.D., Columbia. Medical Consultant. (Deceased, 1970.)
 MARY L. O'BRIEN, Account Clerk.
 DOROTHY E. PERET, Lowell's Business College, Binghamton, New York. Secretary.
 VERENA SCHNORE, B.A., Senior Teachers' Training College, Zurich. Secretary.
 HADLEY C. STEPHENSON, B.S., D.V.M., Cornell. (Professor Emeritus of Veterinary Therapeutics and Small Animal Diseases), Veterinary Consultant.
 JEANNA SWANSON STORM, A.A.S., Mohawk Valley Community College. Secretary to the Director.
 SUSAN RODMAN, B.A., University of North Carolina. Laboratory Technician.
 ELIZABETH WHEELER, Laboratory Assistant.
 CARL W. YOST, B.S., Syracuse University. Laboratory Technician.

SPECIAL LABORATORIES

Colgate Division (Provided by Miss Adele S. Colgate):

- RANDA BEST, R.N., Robert Packer Hospital. Laboratory Technician.
 FREDERICK A. HINMAN, B.A., Ithaca College. Laboratory Technician.

Daynemouth Division (Provided by Colonel and Mrs. Lee Garnett Day):

- LISLE GEORGE, B.S., Pennsylvania State University. Research Assistant.
 MARILYN A. MENEGUS, B.S., College of St. Elizabeth. Research Assistant.
 BARBARA J. REDING, Alfred University. Laboratory Technician.

Distemper Evaluation Laboratory (Operating Funds Provided by the American Kennel Club):

- SONDRA BURDA, Auburn Community College. Laboratory Technician.
 DOUGLAS S. ROBSON, B.A., M.A., Iowa State; Ph.D., Cornell. Consultant in Statistics.

- ALEXANDER ZEISSIG, B.S., D.V.M., M.S., Ph.D., Cornell. Research Associate. (Retired, July, 1970.)

Givalda Division (Provided by Mrs. Geraldine Rockefeller Dodge):

- CAROL V. LIGHTSEY, B.S., Colorado State University. Laboratory Technician.
 PHILIP A. PICKERILL, D.V.M., Iowa State; Ph.D., Cornell. Research Assistant. (Received Ph.D. degree 1970 and returned to Agricultural Research Service.)

Richard King Mellon Electron Microscopy Laboratory (Provided by Mellon Foundation):

- MAX J. G. APPEL, Dr. med. vet., University of Hannover; Ph.D., Cornell. Associate Professor of Microbiology.
 ESTHER GOWAN, Cornell. Laboratory Technician.
 DEBRA SHERMAN, B.S., University of Pittsburgh, M.S., University of Chicago. Electron Microscope Technician.

Seeing Eye Foundation Laboratory:

- S. I. BISTNER, B.S. Rutgers; D.V.M., Cornell. Assistant Professor Comparative Ophthalmology, Dept. of Small Animal Medicine.
 LENORA S. SAMMONS, B.S., Pennsylvania State University. Laboratory Technician.

Animal Care and Maintenance

CHARLES BAILOR, Animal Technician.
 CLARENCE CAPLE, Farmer.
 BERNARD L. CLARK, Animal Technician.
 MICHAEL FINLEY, B.A., St. Lawrence. Technical Assistant.
 GERALD MILLER, Animal Technician.
 ELDON MEAD, Mechanic.
 PAUL ORTON, Technical Assistant.
 ERIC G. SCHANO, Technical Assistant.
 CARL SEARS, Experimentalist.
 FRANK SEARS, Building Maintenance Supervisor.
 NICHOLAS SWADER, Animal Technician.
 LLOYD TOTMAN, Animal Technician.
 DANIEL P. VIETS, B.S., Cornell. Technical Assistant.
 EDSON WHEELER, Senior Mechanician.

GENERAL LABORATORIES

FRANCES BARNES, A.A.S., Alfred University. Laboratory Technician.
 LELAND E. CARMICHAEL, A.B., D.V.M., California; Ph.D., Cornell. John M. Olin Professor of Virology.
 JAMES A. HOUSE, B.S., D.V.M., Ph.D., Cornell. Research Associate. (Resigned to accept position with Pitman-Moore Co.).
 JANICE D. JACKOVINO, B.A., Drew University. Laboratory Technician.
 JEAN C. JOUBERT, Laboratory Technician.
 GEORGE LUST, B.S., University of Massachusetts; Ph.D., Cornell. Assistant Professor of Biochemistry.
 VIVIAN MORGAN, Laboratory Technician.
 ELIZABETH POYER, Corning Community College. Laboratory Assistant.
 WALTER PRONSKY, B.S., Cornell. Laboratory Technician.
 MAIRI J. SAUER, B.Sc., Glasgow University. Laboratory Technician.



Dr. Lyman R. Fisher presenting a check "In Memory of Mr. Albert E. Van Court" on behalf of the Westbury Kennel Association to Dr. Hadley C. Stephenson.



Elmira Kennel Club President Ronald Hamlin and Mrs. Brewster, Chairman of the 1969 Show, present a check for \$1,000.00 to Dr. Baker.

ACKNOWLEDGMENTS

The Cornell Research Laboratory for Diseases of Dogs gratefully acknowledges gifts received from our contributors from September 1, 1969 to September 1, 1970 in support of our research program.

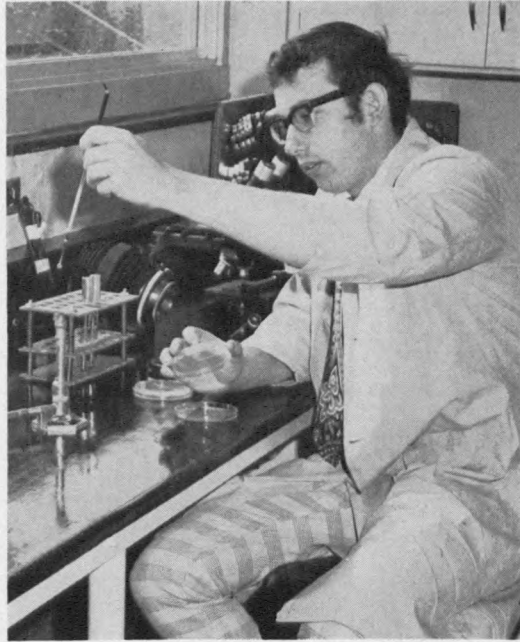
IN MEMORIAM

Mrs. Thomas M. Ball
 Dr. Harold L. Brown
 Mrs. Irene C. Buthum
 Mr. Everett M. Clark
 Mr. & Mrs. William W. Colket
 Mr. Ivan East
 Dr. John S. Gordon
 Dr. Oswald R. Jones
 Mr. Daniel Love
 General Richard King Mellon

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 Dr. Robert D. Miller
 Dr. Ralph Gordon Murch
 Mr. George Murnane
 Dr. Nicholas M. Paddock
 Dr. Simon D. Shoulkin
 Dr. Emanuel Silverstein
 Dr. Charles B. Skinner
 Dr. Jean Van Tassell Smith
 Mr. Albert Eugene Van Court



Workers in new laboratory for studies of eye defects.



Research continues on brucellosis of dogs.

Individuals

- Mrs. Grace E. Allen
 (In Memory of Bonnie)
 Miss Mildred Allen
 Anonymous
 Miss Rosemarie Antonelli
 Mr. Francis R. Appleton, Jr.
 Mrs. W. D. Applewhite
 Mrs. Leon E. Arliss
 Mrs. Edward Atwater
 Mr. & Mrs. E. H. Awbrey
 Mrs. Esther W. Backus
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 Mrs. Dudley Baker
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 Mrs. John T. Barry
 (In Memory of Collins I. W.)
 Mrs. Barbara Barty-King
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 Mrs. Alva Brill
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 Mrs. Paul E. Gardner
 Miss Elaine Garland
 Mrs. Gerald E. Genaw
 Mrs. Frances M. Gerdes
 Miss Doris Giles
 Mr. Norton L. Goldsmith
 Miss Joan C. Grossman
 (In Memory of O'Toole)
 Miss Emma M. Guckes
 Mr. Harold L. Hall
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 Mr. & Mrs. E. Roland Harriman
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 Mrs. Dona E. Hausman
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 Mr. & Mrs. James J. Hunter
 Mr. Austin S. Igleheart
 Mr. & Mrs. R. L. Ireland

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 Miss Barbara L. Kingsbury
 Miss Barbara A. Kirchner
 Mr. & Mrs. Donald Kirk
 Mr. David Klee
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 Mrs. William K. Laughlin
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 Mr. Stephen V. Lines, Jr.
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